SUMMARY OF THE OFFICE ACTION

1) The Request for Continued Examination has been accepted.
2) Claims 49-52 have been objected to because there are multiple sections with the same paragraph descriptors b) and c).
3) Claims 49-56 have been rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,156,139 (Wilson) in view of U.S. Patent No. 5,879,149 (Briggs) and U.S. Patent No. 3,865,185 (Otsbo).

RESPONSE TO THE OFFICE ACTION

1) The Request for Continued Examination has been accepted.
2) Claims 49-52 have been objected to because there are multiple sections with the same paragraph descriptors b) and c).

The claims (49 and 51) have been amended to correct these issues.

3) Claims 49-56 have been rejected under 35 U.S.C. 103(a) as unpatentable over U.S. Patent No. 5,156,139 (Wilson) in view of U.S. Patent No. 5,879,149 (Briggs) and U.S. Patent No. 3,865,185 (Otsbo).

The rejection of record is fundamentally in error for a number of clear and specific points.

Although Wilson shows a manifold with "multiple passages" **(16 and 22A)**, those multiple passages are quite distinct from those recited in the claims of the present application. In the presently claimed invention, the first passageway is the oil passageway and the second passageway is the heated fluid passageway. In Wilson, the first passageway **16** is the air (oxidizing gas) passageway and the second passage way **(22A)** is the oil passageway.

Wilson uses a resistive heating element **14** to heat the fuel, and that is distinctively different and is a clear disadvantage to the present system. Resistive heating is quite unstable and difficult to precisely control, especially where as shown by Wilson, the resistive heating element **14** is repeatedly and discontinuously in contact with diverted oil in bores **18** where the oil is diverted in the cylindrical sections **29**. Heating is uneven because of the separate zones, and when dealing with fuel oil, these differences in heating levels can and does cause carbonization (carbon deposition) from decomposition of the heating oil. Because of the variations in temperatures along a resistive element (as in **14**), temperatures must be kept well below optimization to prevent carbon deposition. Carbon deposition is both destructive of the manifold and flow through the system and causes a need for continually greater temperatures (to maintain even a less than optimum temperature increase in the oil) for conduction through the insulating carbon deposits, which in turn creates more carbon deposits. Therefore, the heated fluid system of the claims is clearly novel and beneficial compared to the resistive heating element system of Wilson.

The additional references cited in the rejection do not overcome this failure of Wilson and do not show the benefits of the present system, including the prevention of additional carbon deposition.

Briggs also shows an electrically resistive fuel warming element (the preheating unit **66** with the "positive temperature coefficient (PCT) electric heating elements **72**." Briggs teaches only electrical resistive heating of the oil, which again suffers from all of the defects of Wilson. The combination of Wilson and Briggs does not teach the significant technical advantage of using heated fluids to heat the oil **to prevent carbon deposition/crystallization.** By using the fluid heating of the present technology, variations in local temperatures that exceed an optimum temperature are always avoided. The temperature transmitted to the oil can never be higher than the temperature of the heated liquid. With electrically resistive heating, power surges, reduced flow of oil, and other variables can and do allow the temperature of the resistive heating elements to suffer from good temperature control. That failure in the electrical heating system is the single greatest cause of carbon crystallization in fuel heating manifolds, and both Wilson and Briggs suffer from that deficiency.

The original specification of Applicants clearly describes and explains this unexpected result and benefit in paragraphs [0059 – 0067]. This argument is supported by the original specification as filed. **This facet of the claimed invention clearly establishes an unexpected result in the structure of the claimed device.**

Ostbo does not correct that deficiency for a number of reasons. A first failure of Ostbo is that there is absolutely nothing material in Ostbo with regard to fuel oil heating, and avoidance of carbon crystallization in a fuel oil heating manifold. Faced with the problems created by the Wilson and Briggs system, one would not turn to Ostbo for a solution to that problem. Ostbo is using heat exchange tubes in the pasteurization of milk (See column 1, lines 48-56). Even though heat is being exchanged between two fluids, that is not an equivalent and therefore interchangeable system with regard to the systems of Wilson and Briggs. It is neither equivalent nor obvious to use a system used to control the temperature of milk in a pasteurization process (including "**cooling the pasteurized milk...**" column 1, line 54) to prevent the deposition of carbon within a fuel oil heating manifold.

It is important to note that if the two different heating systems were equivalent, they would be expected to perform the same. It is therefore an unexpected result that

when the liquid heating system of the present invention replaces the resistive heating system of Wilson in view of Briggs, there is a substantial and important improvement in performance by preventing carbon deposition. In this regard, it must be noted that the temperature to which Wilson, Briggs and the present invention wish to heat the fuel oil is the same, yet the liquid heating system of the invention provides unexpected and beneficial results in reducing or completely eliminating carbon crystallization. This is unexpected if the two different heating systems are asserted to be equivalent, as they are in the rejection. Applicants discovered that even though resistive heating was used to maintain the same temperature in the heating oil that the liquid heating system was used to maintain, the local variability of the resistive system was causing the undesirable levels of carbon crystallization. It was unobvious to one of ordinary skill in the art that the use of the liquid heat transfer system, heating the oil to the same overall target temperature, reduced or eliminated the carbon crystallization problem. As there was no knowledge from the art of record of the existence or cause of that problem, the solution by applicant was two-fold, in recognizing the problem and its cause, and in finding a way to overcome the problem while still heating the fuel oil to the desired temperatures.

These limitations are present in each of claims 49, 53 and 55, and each of these independent claims 9and all of the claims dependent therefrom) are patentable over the combination of three references cited in the rejection.

The rejections of record are clearly in error and must be withdrawn.

CONCLUSION

The above amendments to the claims correct the errors noted by the Examiner and better describe the invention as a whole.

If the Examiner believes that a telephone interview would assist in advancing the application or issues in the rejection, the Examiner is courteously invited to call the attorney of record, **Mark A. Litman, 952.832.9090, Central Time Zone** to discuss any remaining issues.

Respectfully submitted,
RYAN BECHARD

By His Representatives,

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Date: 10 June 2009 By: _____
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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this Transmittal Letter and the paper, as described herein, are being sent by facsimile transmission or deposited in the United States Postal Service, as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop AMENDMENT, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450 on 10 June 2009 .

Mark A. Litman
Name

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Signature